

A REMARKABLE NEW *SOLVA* WALKER (DIPTERA: XYLOMYIDAE)
FROM NORTHERN BORNEO

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Abstract.—*Solva kinabalu*, new species, is described from northern Borneo (Malaysia: Sabah, Mt. Kinabalu). It has a remarkably modified first antennal flagellomere in the male. The new species is most similar to *S. furcicera* Adisoemarto which also has a modified first antennal flagellomere. This is the first time male that a male secondary sexual character is reported in the Xylomyidae.

Key Words: Borneo, *Solva*, xylomyid fly, Xylomyidae, secondary sexual characters

The genus *Solva* Walker is the largest in the Xylomyidae, with 96 valid species currently recognized (Woodley, in press). Although the genus is poorly studied in most tropical regions, a tabulation of known species indicates that *Solva* is most diverse in the Oriental Region, where 45 species are known.

I discovered the species described here in the backlog materials at The Natural History Museum (BMNH) in London. It is of particular interest because of the sexual dimorphism present in the antennal structure, which is previously unreported in the Xylomyidae.

***Solva kinabalu* Woodley, new species**
(Figs. 1–5)

Diagnosis.—This species belongs to a small group of elongate, darkly colored *Solva* sometimes accorded generic rank by previous authors as *Ceratosolva* de Meijere (1914; type species *Ceratosolva cylindricornis* de Meijere). *Solva kinabalu* is most similar to *S. furcicera* Adisoemarto, also from Borneo, which shares a modified first

antennal flagellomere (Adisoemarto 1973: fig. 4). In *S. furcicera*, the second flagellomere is inserted about one-third of the way from the base of the first, and the apical two-thirds of the first flagellomere is conically tapered to a sharp apex. *Solva kinabalu* also differs from *S. furcicera* in having the color of the anteroventral surface of the hind femur and the entire hind tibia except the basal fourth black.

Description.—*Male:* Head (Fig. 1) black, 1.49 times higher than long; dichoptic, eye large, bare, ommatidia uniform in size; ocellar tubercle only slightly prominent; face convex, separated from eye margins by narrow groove; frons concave, narrow, 0.14 head width at ocellar tubercle, gradually widening ventrally, margins weakly notched just above antennae; frontal margins, upper part of face, and posterior part of head weakly grayish tomentose; pilosity semi-appressed on frons, erect on genal region, present but inconspicuous on posterior part of head, pale grayish, other areas bare; antenna 3.0 times length of head, ratio of segments 7:4:72[3:10:9:9:9:



Figs. 1–2. Head and antenna of *Solva kinabalu*. 1, Head, left lateral view. 2, Detail of antennal base, showing modified first flagellomere.

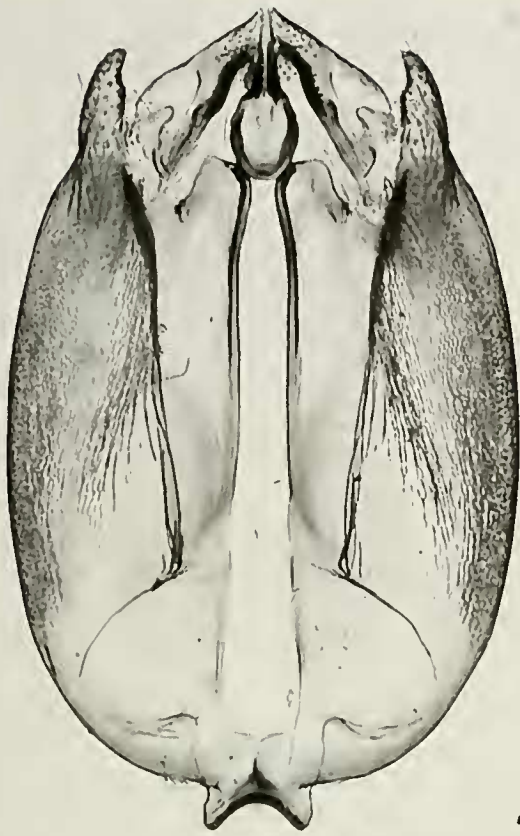
9:14], scape and pedicel brownish yellow, first flagellomere blackish but more yellowish on inner side, flagellomeres 2–8 black, the second vaguely pale on inner side at base; first flagellomere (Fig. 2) highly modified with dorsolateral process that is slightly expanded apically, with a few curved apical hairs; hairs on scape and pedicel blackish with some pale hairs ventrally, longest dorsolaterally; palpus slender, first segment brownish yellow, second segment yellowish white, nearly cylindrical, about 2.5 times as long as first; both palpal segments with pale hairs, second segment bare apically; proboscis pale brown. Thorax black, postpronotal lobes and very narrow notopleural strip vaguely brownish; prosternum, anepimeron, mediotergite, and laterotergite with sparse, inconspicuous, pale tomentum; scutum and scutellum with inconspicuous brownish semi-appressed pilosity; pleura with short, pale pilosity, most conspicuous on propleuron and upper part of katepisternum; meron bare except for small patch of dense short hairs on front part of anterior depression; anepimeron mostly bare; anepisternum with short, inconspicuous brownish pilosity; legs dull yellow except middle femur vaguely darkened ventrally; hind femur blackish anteroventrally and at apex; hind tibia entirely dark except dorsal side at extreme base, front and middle tarsi brownish, hind tarsus with basal third of basitarsus, extreme apex of third and all of fourth and fifth tarsomeres dark; pilosity on legs short and fairly dense, generally conforming to color of integument except middle tibia with mostly dark hairs; wing slightly infuscated with brownish coloration, completely set with dense microtrichia; anal lobe slightly emarginate; wing margin indented at end of vein $A_1 + CuA_2$; halter yellowish. Abdomen black, margins vaguely browner, tergites densely, finely punctate, sternites weakly sclerotized; pilosity of tergites brownish, short, semi-appressed, a few longer, pale hairs along lateral margins, especially on tergite one; very little weak tomentum, mostly visible on first

tergite; terminalia (Figs. 3–4) with gonocoxites elongate, evenly rounded laterally, with slightly arcuate posterolateral processes ventrally; hypandrium divided medially, posterior margin narrowly bilobed, the lobes with minute spicules; gonostylus conically tapered toward apex, small digitate process anterodorsally may also be part of gonostylus; phallic complex bulbous on anterior half, narrowly tubular and slightly tapered posteriorly, slightly arcuate ventrally; epandrium (Fig. 5) elongate, moderately tapered posteriorly, weakly sclerotized except anteromedially; cercus small, about as long as wide, very slightly expanded laterally, posterior margin truncate. Length 8.1 mm.

Female: Differs from male as follows: Head 1.38–1.50 times higher than long; frons 0.12–0.14 width of head at ocellar tubercle; antenna 2.6 times as long as head, ratio of segments 6:3:54.5[4:8:7.5:7:6:6:6:10]; first flagellomere short but unmodified; second segment of palpus thicker, more ovoid; wing with anal lobe very vaguely to not emarginate; abdomen with cercus yellowish, segments about equal in length, first segment thicker. Length 6.5–9.1 mm.

Type material.—The holotype ♂ [BMNH] is labeled: "N. BORNEO Mt. Kinabalu./Mesilau Trail 20.iii.1964./Royal.Soc.Exped. coll. S. Kueh. B.M. 1964-250./HOLOTYPE ♂ Solva kinabalu N. E. Woodley 2004." The type locality is in the present day state of Sabah in Malaysia. The specimen is in good condition but is missing the right hind leg beyond the trochanter, most of the left halter, and the apical half of the right wing. The right antenna is glued to a paper point on the specimen pin. The terminalia are preserved in glycerin in a microvial on the specimen pin. The allotype ♀ [BMNH] is from MALAYSIA: Sabah [as "British North Borneo"], Mt. Kinabalu, Kenokok, 3300 feet, 23 April 1929, H. M. Pendlebury. One paratype ♀ [BMNH] has the same data as the allotype except that it was collected 25 April 1929.

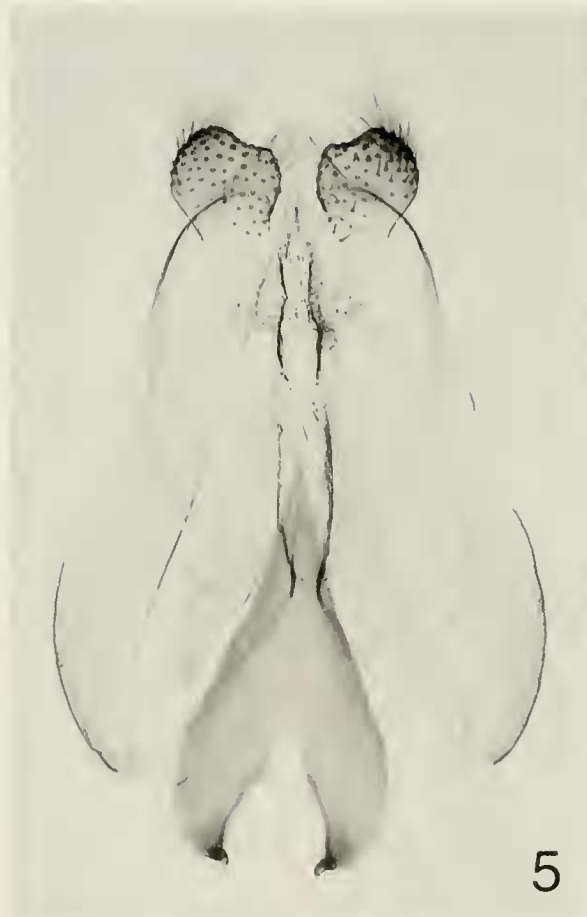
Etymology.—The species name is a noun



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Figs. 3–5. Male terminalia of *Solva kinabalu*. 3, Genital capsule, dorsal view. 4, Genital capsule, dorsal view, slightly flattened in temporary slide mount. 5, Epandrium and cerci, dorsal view.

in apposition based on the name of the type locality.

Remarks.—There is slight variation in the two female specimens examined. The female paratype is conspicuously larger than the allotype. It is also more darkly colored, which may only reflect maturity of the specimen. The paratype has the anal lobe of the wing vaguely emarginate, while in the allotype no modification is visible.

Two images of the genital capsule are presented (Figs. 3, 4). Figure 4 was slightly flattened in a temporary slide mount, and shows some additional details of spatial orientation of structures.

This is the first time that an obvious dimorphism in secondary sexual characters has been reported in the Xylomyidae. The functional significance of the male antennal process in *S. kinabalu* is not known, but perhaps it is involved in male-male head to head behavior of some sort, as in other Diptera with male head modifications (McAlpine 1975, Moulds 1977). It is likely that dimorphism also exists in *Solva furcicera* (also from Borneo), although only a unique male of that species is known.

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LITERATURE CITED

- Adisoemarto, S. 1973. New species of *Solva* Meigen from Indonesia (Diptera: Solvidae). *Treubia* 28(2): 35–40.
- McAlpine, D. K. 1975. Combat between males of *Pogonortalis doctlea* (Diptera, Platystomatidae) and its relation to structural modification. *Australian Entomological Magazine* 2(5): 104–107.
- Meijere, J. C. H. de. 1914. Studien über südostasiatische Dipteren. VIII. *Tijdschrift voor Entomologie* 56(Supplement): 1–99.
- Moulds, M. S. 1977. Field observations on behaviour of a North Queensland species of *Phytalmia* (Diptera: Tephritidae). *Journal of the Australian Entomological Society* 16: 347–352.
- Woodley, N. E. In press. A world catalog of the Xylomyidae (Insecta: Diptera). *Myia*.